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# Clean Coalition

Community Update | September 25, 2013

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Dear Clean Coalition Friends,

This summer, as the U.S. solar industry was in the midst of its all-time second best quarter, three utilities announced plans to bring nearly one gigawatt of solar energy online by 2016. Importantly, these programs make it undeniably clear that local renewables are a smart investment as they protect ratepayers from volatile costs of fossil fuels and enable utilities to defer massive transmission investments. And the tremendous environmental benefits of clean local energy provide an invaluable bonus!

The rapidly changing energy landscape brings excitement but not surprise. Since its inception in 2009, the Clean Coalition has tirelessly championed the unparalleled value and economic opportunity offered by opening the wholesale distributed generation market. Now, with momentum and the support of key industry leaders, the transition will only accelerate. Jon Wellinghoff – Chairman of the Federal Energy Regulatory Commission – predicts exponential growth for local renewables as the benefits of distributed generation are fully “analyzed, quantified, and monetized.”

As a leading force in this effort, the Clean Coalition continues educating utilities, policymakers, and advocates about the suite of benefits provided by clean local energy. For example, the Long Island Power Authority’s CLEAN Solar Initiative will save its customers more than \$80 million in unnecessary transmission costs by bringing distributed solar generation online in grid-constrained areas. The Clean Coalition, thrilled with LIPA’s impactful program, is focused on replicating its success in similar programs around the country.

To ensure greater deployment of local renewables, the Clean Coalition is proud to announce that its [CLEAN Resource Hub is now officially live](#). The Hub offers a wealth of free tools to help policymakers, utilities, and advocates expand the wholesale distributed generation market segment throughout the United States. Simultaneously, the organization is progressing its Distributed Generation + Intelligent Grid (DG+IG) Initiative. In collaboration with Pacific Gas & Electric, the Clean Coalition has embarked on a cutting-edge DG+IG project in the Hunters Point area of San Francisco to prove that local renewables can achieve at least 25% of total electric energy needs with local renewables while maintaining or improving power quality, reliability, and resilience.

This quarterly newsletter is full of additional details on the following highlights:

- [Utilities leverage CLEAN Programs as part of a plan to bring nearly one gigawatt of new solar capacity online](#)
- [New resource to open the wholesale distributed generation market segment](#)
- [California Legislature passes distributed generation bills](#)
- [New PG&E policy will significantly reduce interconnection costs](#)
- [Flattening the Duck \(Chart\) into a Halibut](#)
- [DG+IG project to transform a San Francisco neighborhood](#)
- [Advanced inverters: providing voltage regulation where it is needed most](#)
- [Featured event: Platts 9th Annual California Energy Market](#)

As always, thank you for supporting the Clean Coalition and its pursuit of making clean local energy accessible now.

## In the News

[Advanced inverters: providing voltage regulation where it is needed most | Fierce Smart Grid | September 11, 2013](#)

Pairing advanced inverters with distributed generation can make the power grid more reliable and efficient. Thus, it is not surprising that utilities are starting to embrace this intelligent grid solution.

[Renewable energy, not fracking, is the best choice for California | Sacramento Bee | August 11, 2013](#)

This op-ed by Craig Lewis & Chris Paine (director of "Who Killed The Electric Car?") argues for the development of clean energy in California to drive sustained economic growth while also protecting the state's vital agricultural and environmental resources.

[Forward-thinking utilities embracing renewables | Fierce Energy | August 1, 2013](#)

The concept of distributed generation (DG) has existed for decades, but only in the past few years have utilities in the United States actively begun to diversify their energy portfolio with local renewables.

[Utility CLEAN programs driving distributed solar | Fierce Energy | July 29, 2013](#)

Georgia Power, Long Island Power Authority (LIPA) and Fort Collins Utility (FCU) are joining utilities in Sacramento, CA, Los Angeles, CA, and Gainesville, FL, in implementing CLEAN Programs, with the Georgia, New York and Colorado utilities planning to bring a total of 840 MW of solar energy online by 2016.

[What Can the United States Learn from](#)

Sincerely,  
Craig Lewis

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## Utilities leverage CLEAN Programs as part of a plan to bring nearly one gigawatt of new solar capacity online

Utilities in Georgia, New York, and Colorado recently announced plans to bring a total of 840 megawatts (MW) of solar energy online by 2016, clearly signaling that local renewable generation is a smart economic investment for utilities across the country.

On July 11, the Georgia Public Service Commission (PSC) approved a motion to expand Georgia Power's Advanced Solar Initiative (ASI) from 210 MW to 735 MW. As part of the ASI, Georgia Power – an investor-owned utility serving more than two million customers – will bring at least 190 MW of distributed solar online through a CLEAN Program. Notably, the decision by Georgia's all-Republican PSC shows renewables are increasingly attractive to fiscal conservatives looking to keep energy rates affordable and hedge against significant risks associated with natural gas and other fossil fuels.

"Commissioner McDonald's motion adding 525 MW of solar to our 20-year energy plan is a hedge against more coal regulation and natural gas price volatility," explained PSC commissioner Tim Echols.

Georgia Power is not alone in pursuing greater distributed solar energy through a CLEAN Program. On July 12, Long Island Power Authority (LIPA) announced plans to expand its CLEAN Solar Initiative (CSI) from 50 MW to 150 MW, which will bring enough solar energy online to power roughly 13,000 homes. The CSI expansion includes a premium of 7 cents per kilowatt-hour for solar projects sited at critical points on LIPA's grid, which will enable the utility to defer expensive transmission investments.

LIPA's detailed assessment that distributed generation can provide at least 7 cents per kilowatt-hour of incremental value by avoiding additional costs associated with transmission-dependent generation is an important lesson for the rest of the country. The locational value of wholesale distributed generation is substantial and the compensation of such will ensure that energy generation is deployed where it is needed most in a timely fashion.

Fort Collins Utility – the municipal utility in Fort Collins, Colorado – has also unveiled its CLEAN Program, known as the Solar Power Purchase Program. This pilot program will bring 5 MW of distributed solar online by 2015 and serve as a model to expand local renewable generation throughout Colorado and beyond.

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## New resource to open the wholesale distributed generation market segment

Yesterday, the Clean Coalition officially launched its [CLEAN Resource Hub](#), which provides a wealth of free tools to help policymakers, utilities, and advocates expand the wholesale distributed generation (WDG) market segment.

Across the country, there is a growing focus on WDG. Georgia Power, Long Island Power Authority, and the Los Angeles Department of Water and Power are among the latest utilities to initiate or expand CLEAN Programs – creating hundreds of megawatts of WDG market opportunity.

The CLEAN Resource Hub leverages this momentum by ensuring that policymakers, utilities, and advocates have the tools they need – including model policies, program design guides, and global best practices – to design and enact impactful policies and programs.

[Register for an exciting webinar](#), titled *The CLEAN Resource Hub: Tools for Making Distributed Renewables Happen in a Big Way*, that will take place tomorrow at 11am PT / 2pm ET to learn more.

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## California Legislature passes distributed generation bills

A number of key energy bills that will affect California's DG market have passed the

## [Germany's Energiewende? | The Energy Collective | July 18, 2013](#)

Germany has embarked on a bold effort to transition their power system away from fossil fuels and nuclear towards renewable energy. The Clean Coalition's Steph Wang explains how this long-term energy plan, known as Energiewende, offers important lessons for U.S. energy policy.

See the Clean Coalition [website](#) for additional news.

## Upcoming Events

### [September 26, 2013 | 2013 SoCal AEE Annual Conference | Downey, CA](#)

Craig Lewis, Executive Director of the Clean Coalition, will present at the 2013 SoCal AEE Annual Conference. This year's Annual Conference focuses on The Building of 2030 and the stated goal of doubling energy efficiency over the next few decades.

### [November 7, 2013 | Platts 9th Annual California Energy Market Conference | San Francisco, CA](#)

Craig Lewis, Executive Director of the Clean Coalition, and Stephanie Wang, Regulatory Policy Director of the Clean Coalition, will each present at the Platts 9th Annual California Energy Market conference on November 7 and 8.

### [April 9, 2014 | SolarTech West Coast 2014 | San Francisco, CA](#)

Craig Lewis, Executive Director of the Clean Coalition, will present at the SolarTech West Coast 2014 conference taking place from April 9–11 in Los Angeles, CA.

See the Clean Coalition [website](#) for additional upcoming events.

## Recent Regulatory Filings

### [CPUC | Clean Coalition Opening Comments on Assigned Commissioner's Ruling Regarding the Transfer of Responsibility for Collecting Solar Statistics from the California Solar Initiative | September 9, 2013](#)

Legislature and await Governor Brown's signature.

Senate Bill (SB) 43, known as the Green Tariff Shared Renewables Program, requires the state's three major investor owned utilities (IOUs) to offer customers the option to subscribe to a specific percentage of renewable energy that is generated from within the applicable IOU's service territory. The new program, authored by Senator Lois Wolk and supported by many solar advocates, calls for the deployment of an additional 600 MW of WDG – 100 MW of which must be in projects of 1 MW or smaller and sited in disadvantaged communities.



Assembly Bill (AB) 327, if signed into law, will result in major changes to several state energy policies. First and foremost, the bill lifts the Renewable Portfolio Standard (RPS) cap and allows the California Public Utilities Commission (CPUC) to require that IOUs procure more renewables than the current 33% RPS. Although the bill does not specifically mandate that the CPUC require more renewables, it does create a streamlined pathway to raise the 33% RPS cap. AB 327 also modifies electricity rate design to include a controversial new policy that allows the CPUC to authorize IOUs to charge a fixed fee to customers for grid expenses – regardless of how much energy a customer uses. Net metering advocates oppose this element of the policy as any grid charge would reduce the economic benefits of net metered projects (note that WDG projects are not impacted by such grid charges). Conversely, AB 327 contains significant wins for net metering advocates. The bill clarifies and extends the current net metering policy while creating a framework for a new policy after 2017.

Importantly, the Clean Coalition scored a huge win in AB 327. The bill includes a section on planning and grid preparation for distributed resources – like DG, energy efficiency, energy storage, electric vehicles, and demand response – that draws from policy innovations promoted by the Clean Coalition for the past three years. Specific Clean Coalition victories within AB 327 include the following new requirements:

1. IOUs must submit plans to the CPUC that identify optimal locations for the deployment of distributed resources.
2. The IOU plans must reflect locational benefits of DG and other distributed resources.
3. Any spending on the distribution grid needed to accomplish the distributed resources plan must be included in the next general rate case.

The Clean Coalition is looking forward to working with the CPUC and the California Energy Commission (CEC) to ensure that utilities leverage the full benefits of DG and Intelligent Grid (IG) solutions and that the utilities' plans are guided by a comprehensive statewide energy resources strategy.

Lastly, AB 792 grants a new local tax exemption. Certain municipalities in California charge a tax on the consumption of electricity in their jurisdiction, also known as a "utility users tax." AB 792 simply exempts from the tax any consumed energy that was generated on-site by a clean energy resource, including RPS eligible technologies and several efficiency-oriented resources like fuel cells. While the bill does not benefit WDG, the Clean Coalition broadly supports the removal of barriers to the deployment of DG and IG solutions.

### **New PG&E policy will significantly reduce interconnection costs**

After continued urging by the Clean Coalition, Pacific Gas & Electric (PG&E) recently proposed new standards, which will halve the number of Direct Transfer Trips (DTTs) required for interconnecting WDG projects to the grid.

DTTs are expensive safety devices with costly communication requirements that ensure power is not sent back onto the grid by WDG projects when the grid is down. While PG&E has historically required DTTs for many WDG projects, Southern California Edison

This filing provides Clean Coalition's guidance and recommendations on various data collection strategies for the California Solar Initiative and improving its relationship with Rule 21 interconnection procedures.

### **[CPUC | Advanced \("smart"\) Inverter Standards for Rule 21 Interconnection Tariff | August 30, 2013](#)**

This filing represents the Clean Coalition's reply comments responding to other parties and reiterating our support for the adoption of standards without delay and further research to continue to support the value of advanced inverters.

### **[CPUC | Rule 21 Interconnection Working Group on data reporting proposal | July 30, 2013](#)**

This filing represents the Clean Coalition's reply to the Joint IOU Response from July 12, 2013. Following up on the Rule 21 Interconnection Settlement and ongoing successful efforts by the Clean Coalition to increase transparency in the interconnection process, the CPUC established a Working Group to recommend improvements in public data reporting and review of costs and tariff compliance for both Rule 21 and FERC jurisdictional Wholesale Distribution Tariffs in California.

### **[CPUC | SONGS Replacement and Long-Term Procurement Proceeding | July 26, 2013](#)**

This filing represents the Clean Coalition's joint letter to Governor Brown regarding the plan to replace the San Onofre Nuclear Generating Station (SONGS). The letter urges that the CPUC's active public process in the Long-Term Procurement Plan (LTPP) proceeding is the best forum to determine how it will be replaced, and that the process should be transparent, utilize the thorough analyses already provided therein, and not result in construction of unneeded fossil-fueled power plants and transmission lines at the expense of public health, the environment, and customers.

See the Clean Coalition [website](#) for additional regulatory filings.

PG&E has historically required DDTs for many WDG projects, Southern California Edison and San Diego Gas & Electric have not required DDTs in most cases.

PG&E's stricter requirements constituted a major hurdle for WDG because DDT installation costs often surpass \$600,000 per project. PG&E's latest technical bulletin outlines clear criteria in which DDTs will be required, and in addition to the increased transparency, a reduction in the need for DDTs is expected. Furthermore, reductions in interconnection costs benefit ratepayers through lower energy costs, and the new DDT requirements will save ratepayers money.

The Clean Coalition was a key driver in this policy innovation and will press PG&E to document its improvements, so stakeholders and regulatory agencies can verify that the new criteria significantly reduce the number of DDTs required.

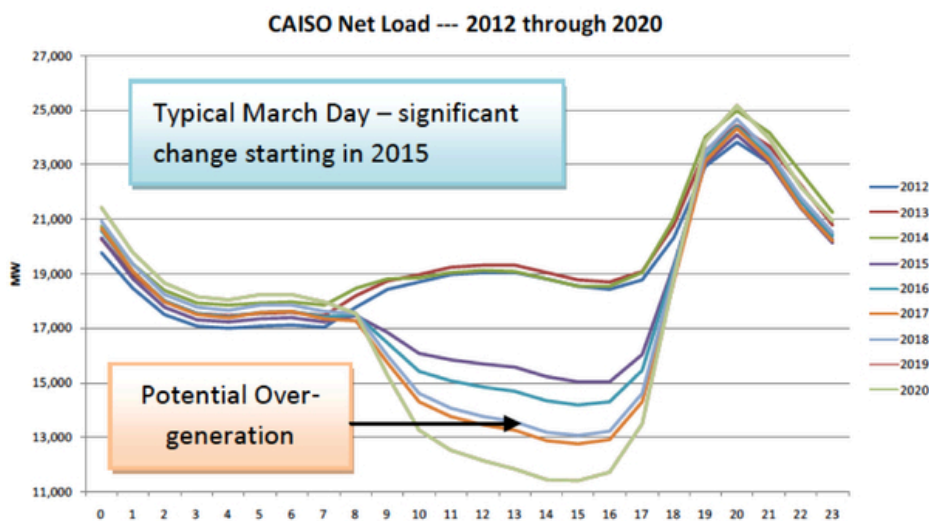
## About the Clean Coalition

The Clean Coalition is a nonprofit organization whose mission is to accelerate the transition to local energy systems through innovative policies and programs that deliver cost-effective renewable energy, strengthen local economies, foster environmental sustainability, and provide energy resilience.

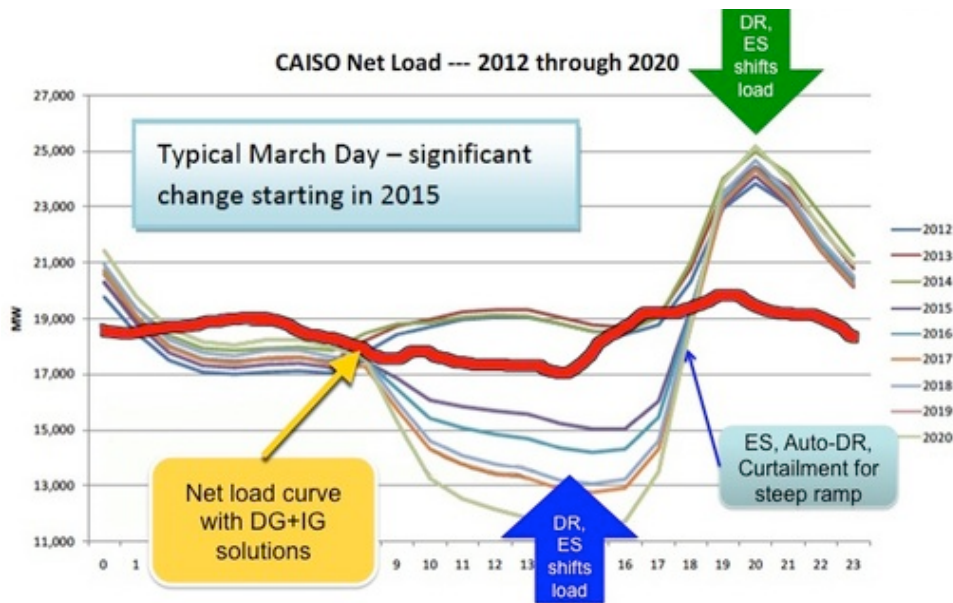
### Flattening the Duck (Chart) into a Halibut

The Clean Coalition has comprehensively modeled how Intelligent Grid (IG) solutions like demand response, energy storage, and advanced inverters can support the integration of high penetrations of renewables onto the grid without any need for new natural gas plants.

The California Independent System Operator (CAISO) originally created the "Duck Chart" (below) to illustrate how increased solar generation, when paired with inflexible, conventional base-load resources that are expensive to turn off – such as nuclear and less flexible natural gas – could begin causing midday over-generation during certain months of the year starting in 2018. Unfortunately, CAISO grossly limited the accuracy of the Duck Chart through a number of unrealistic, constraining assumptions and lobbyists working for the traditional power industry have used the crippled Duck Chart to falsely illustrate a need for new natural gas plants that can ramp up and down quickly to address sharp changes in demand.



In response, the Clean Coalition developed a model to show how California can utilize demand response, energy storage, and curtailment – rather than new, expensive natural gas plants – to address potential capacity and ramping issues. The Clean Coalition's model also accounts for realistic levels of energy import and export between CAISO and neighboring territories. When combined, as shown below, these solutions flatten "the Duck" profile of the net load into the profile of a Halibut (an animal distinguished by its flatness).



**The Duck Chart can be flattened into a Halibut**

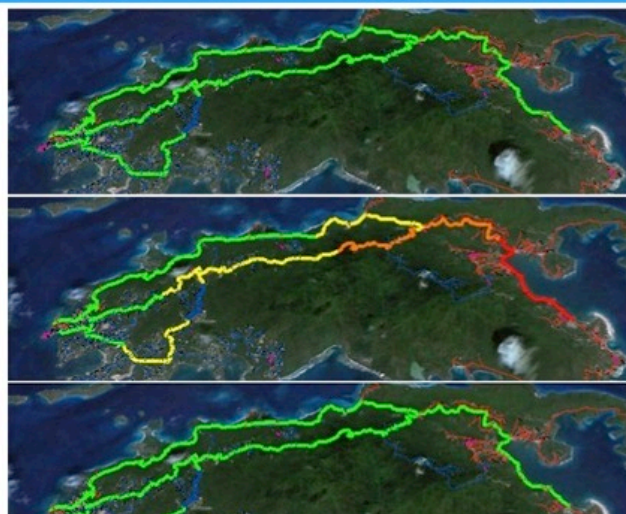
View the Clean Coalition’s comprehensive presentation on this important topic [here](#).

**DG+IG project to transform a San Francisco neighborhood**

The Clean Coalition – in collaboration with the City of San Francisco, PG&E, and others organizations – is spearheading a groundbreaking clean local energy project in the Hunters Point area of San Francisco. The Hunters Point Distributed Generation + Intelligent Grid (DG+IG) Project is one of several undertakings the Clean Coalition is conducting to prove that local renewables can achieve at least 25% of total electric energy needs within the distribution grid while maintaining or improving power quality, reliability, and resilience.

Designed to highlight the technical and economic viability of achieving high penetrations of clean local energy, the Hunters Point Project marks a key step in fulfilling one of the Clean Coalition’s overarching objectives: from 2020 onwards, at least 50% of all new energy generation in the United States come from local sources. In addition to proving the technical and economic viability of high penetrations of local renewables, DG+IG projects set the stage for Substation Microgrids.

**Example DG+IG Grid Stabilization**



1. Baseline
  - 6 AM
  - No PV Impact
2. Overvoltage
  - Noon
  - 20MW PV
3. DG+IG (stable)
  - Noon
  - 20MW PV



Importantly, the Project will serve as a model to guide the nation's rapid energy transition, improve grid performance in terms of power quality, reliability, and resilience, and will engage all communities – from underserved to affluent – in the new energy economy. To ensure success, the Hunters Point DG+IG Project will model the entire grid area served by the Hunters Point substation and simulate the grid performance in the comprehensive and cost-optimized DG+IG scenario.

The Clean Coalition is currently working with PG&E and various San Francisco agencies to model high penetrations of DG, identify rooftops and parking lots as potential sites to host local solar, and find opportunities for biogas and wind projects in Hunters Point.

Advanced inverters, demand response, energy storage and monitoring, communications, and control (MC2) solutions are being evaluated to maximize the benefits of DG+IG.

DG+IG projects like the one in Hunters Point will set the stage for fully featured Substation Microgrids that offer many benefits, including:

1. Maximizing renewable energy in the near-term
2. Enhancing the grid through improved power quality, reliability, and resilience
3. Localizing economic benefits, such as creating community jobs, keeping energy spending local, and providing investment opportunities to local residents and businesses
4. Improving grid efficiency by eliminating significant costs and power losses associated with the long-distance transmission of energy
5. Enhancing the quality of life for local communities by replacing dirty fossil fuel power plants that endanger human and environmental health

Through its leadership on the Hunters Point Project, the Clean Coalition is creating a world-class example for guiding San Francisco and communities around the globe for reaping the benefits of clean local energy.

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#### **Advanced inverters: providing voltage regulation where it is needed most**

Advanced inverters, paired with distributed generation and energy storage, can make the power grid more reliable and efficient. This technology can provision reactive power 24 hours a day, regardless of whether the sun is shining or the wind is blowing, and do so without reducing real power output.

Not surprisingly, forward-thinking utilities across the country are embracing advanced features inherent in almost all inverters that are deployed throughout the world today. Georgia Power, for example, requires small solar generators to use advanced inverters to provision reactive power in exchange for compensation. Similarly, a group of Western utilities is working to make advanced inverters mandatory for all new solar facilities within their service territories.

As long as reactive power provisioning is properly compensated, these utilities are leading a critical transformation where reactive power will be dynamically provisioned where it is needed most: close to loads. A report by the Oak Ridge National Lab found that distributed

“ a 10% oversized advanced inverter, with .9 power factor capabilities, can provision reactive power totaling almost 50% of the operating capacity of the inverter while never curtailing real power production. ”

voltage control significantly outperforms centralized voltage control. Reactive power suffers 8 to 20 times greater line losses than real power, and those losses increase as a line is more heavily loaded. Distributed reactive power minimizes these significant reactive power line losses. Moreover, excessive line congestion can be avoided if distributed generation, energy storage, and advanced inverters are installed throughout the grid. As a result, distributed voltage regulation provides substantial system efficiency while preventing blackouts. Advanced inverters can also be programmed to ride-through minor voltage fluctuations, which eliminates unnecessary grid disconnects.

Unfortunately, outdated U.S. policies currently inhibit the use of the reactive power and

ride-through features built into advanced inverters. Given the importance of technical standards in guiding electrical grid operations, the Clean Coalition is supporting a CPUC working group currently focused on expediting revisions to IEEE and UL technical standards to enable advanced inverters full functionality.

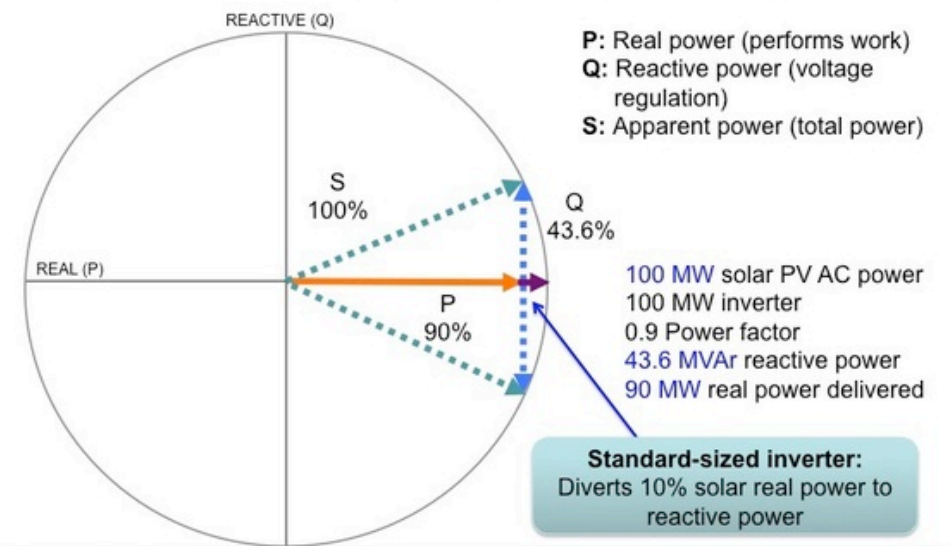
Since advanced inverters are less expensive than conventional solutions for regulating voltage, utilities and their customers will be well served by rapid adoption of this technology. Given that most inverters on the market have advanced capabilities built-in, there are no significant costs to installing the advanced inverter, which is simply a standard inverter with advanced features enabled. However, solar and wind generators with standard-sized inverters must divert a portion of real power production to provision reactive power when sun or wind resources are at their peak. Without compensation for the provisioning of reactive power, generators would lose revenue for curtailing real power output to provide reactive power.

If reactive power will be regularly needed during a generator's peak production hours, installing an "oversized" inverter makes economic sense. For example, a 100 kW solar facility with a 10% oversized inverter (110 kW inverter) set at a 0.9 power factor can draw 10 kW of real power from the grid to convert to 46 kVAr of reactive power even when the solar facility is producing a full 100 kW of real power. In comparison, a 100 kW solar facility with a standard-sized inverter (100 kW inverter) set a 0.9 power factor may need to divert up to 10 kW of real power output to deliver 44 kVAr of reactive power. Hence, a 10% oversized advanced inverter, with .9 power factor capabilities, can provision reactive power totaling almost 50% of the operating capacity of the inverter while never curtailing real power production.

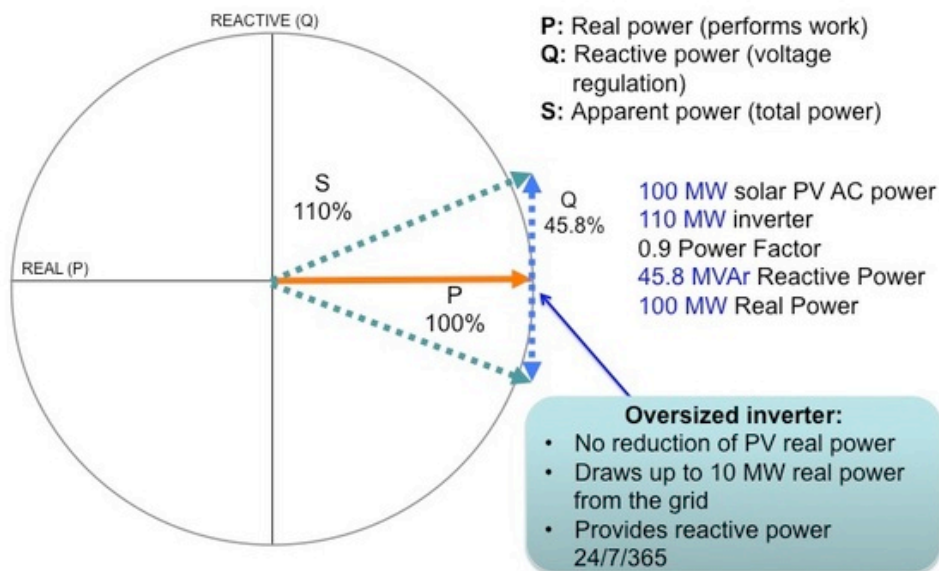
## Advanced Inverters – Reactive Power



**Advanced Inverter at 0.9 Power Factor = 43.6% reactive power**



**Advanced Inverters – Reactive Power (Oversized)**



While the costs of oversizing inverters are less than installing and maintaining capacitor banks, they can still be significant for smaller generators. Therefore, generators should either be compensated for the costs of oversizing inverters or for the value of real power converted to reactive power. In the alternative, utilities may find it more cost-effective to own and control the advanced inverters of independently owned generators, in the same manner utilities own and control capacitor banks for voltage regulation.

**Featured event: Platts 9th Annual California Power and Gas Conference**

Craig Lewis, Executive Director of the Clean Coalition, and Stephanie Wang, Regulatory Policy Director of the Clean Coalition, will both present at the Platts 9th Annual California Power and Gas Conference taking place on November 7-8 at the Marriott Union Square in San Francisco, CA.

On November 7, Mr. Lewis will outline the Clean Coalition’s ongoing DG+IG Initiative, providing a detailed case study on the Hunters Point Project. The following day, Ms. Wang will present the Clean Coalition’s plan that could fully replace the shuttered San Onofre Nuclear Generating Station (SONGS) with DG+IG in Southern California.

The Platts 9th Annual California Power and Gas Conference gives attendees an interactive opportunity to engage with transmission providers, utilities, generators, regulators, investors, and analysts addressing key factors driving the California power market heading into 2014.

Visit [the conference website](#) for more information and to register.

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Clean Coalition  
2 Palo Alto Square  
3000 El Camino Real, Suite 500  
Palo Alto, CA 94306  
US

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